

## Catalogue of American Amphibians and Reptiles.

ANDERSON, JAMES D. 1968. *Rhyacotriton* and *R. olympicus*.

***Rhyacotriton* Dunn  
*Olympic* salamander**

*Rhyacotriton* Dunn, 1920:56. Type species, *Ranodon olympicus* Gaige 1917, by monotypy.

• **DEFINITION.** This small ambystomatid (44–64 mm snout to vent) has large, protuberant eyes, reduced lungs, reduced ypsiloid cartilage, and square vent lobes in the male. It is unique in the family in lacking nasal bones and an opercular apparatus, in the extreme length of the premaxillary spines, and in the great reduction of the pterygoids. The lacrimal, prootic, exoccipital and columella are independent; the teeth are conical. The larvae exemplify the mountain-brook type.

• **DESCRIPTIONS, ILLUSTRATIONS, DISTRIBUTION.** See species account.

• **PERTINENT LITERATURE.** For detailed discussions of structure, relationships and phylogeny at the generic level see Tihen (1958) and Regal (1966). Dunn (1920), Eaton (1934) and de Villiers (1938) provide more limited discussions. See species accounts.

• **ETYMOLOGY.** *Rhyacotriton*, of masculine gender, is from the Greek *rhyax*, meaning stream, and *Triton*, a sea-god.

## COMMENT

Gaige (1917) described *olympicus* as a member of the hynobiid genus *Ranodon*, but Dunn (1920) placed it in the new genus *Rhyacotriton* and suggested a close affinity with *Dicamptodon*. Eaton (1934) proposed close relationship with *Ambystoma* but de Villiers (1938) disagreed as did Tihen (1958), who proposed a new monotypic subfamily Rhyacotritoninae for it. Although Tihen (1958) pointed out many differences between *Rhyacotriton* and *Dicamptodon*, Regal (1966) placed both genera in the subfamily Dicamptodontinae. Regal also suggested that *Rhyacotriton* may represent an early level of terrestriality in salamanders and may indicate relationships between the Ambystomatidae and Plethodontidae.

***Rhyacotriton olympicus* (Gaige)  
*Olympic* salamander**

*Ranodon olympicus* Gaige, 1917:2. Type-locality "Lakeushman [Mason County], Washington." Holotype, Museum of Zoology (University of Michigan) 48608, collected 20 April 1916 by Philip Putnam (not seen by author).

*Rhyacotriton olympicus*: Dunn, 1920:56. Transfer of *olympicus* to *Rhyacotriton*, new genus.

• **CONTENT.** Two subspecies are recognized: *Rhyacotriton o. olympicus* and *R. o. variegatus*.

• **DEFINITION.** Same as for the genus. See subspecies for other characteristics.

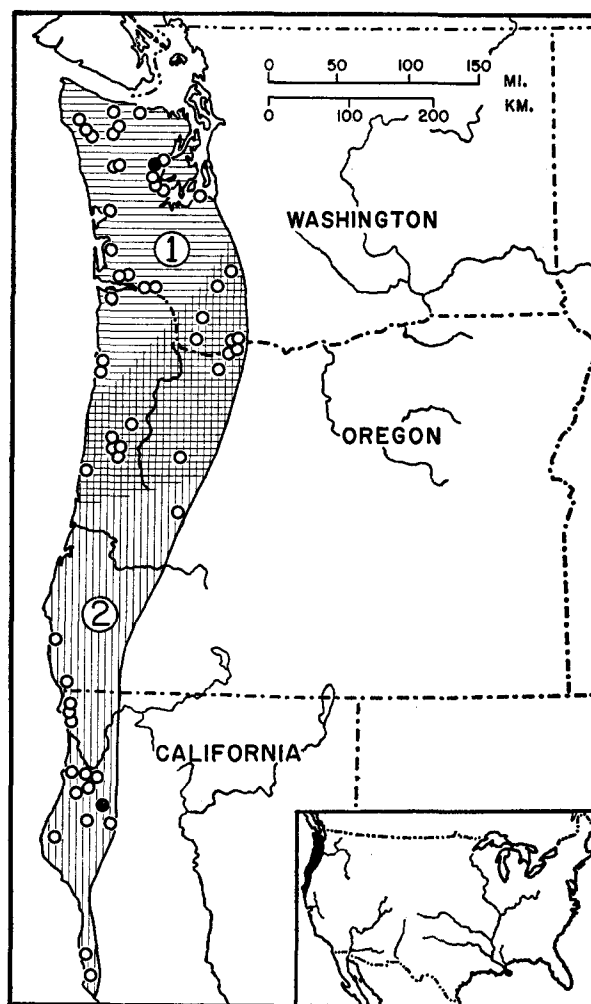
• **DESCRIPTIONS.** The general features were described by Bishop (1943) and Stebbins (1951, 1954, 1966). The reduced lung was described by Noble (1931) and Czopek (1962). Noble (1931) described the thigh musculature and Hilton (1956, 1957, 1959, 1962) briefly described other muscles. Monath (1965) described the ear musculature, noted the absence of an opercular apparatus and extended the observations of Dunn (1922) on the sound-transmitting apparatus. Tihen (1958) described many phylogenetically important features of the osteology and teeth. Brief general descriptions of skeletal features were provided by Hilton (1946, 1948a, 1948b, 1948c, 1951, 1953), and Stokely and Holle (1953, 1954). Cloete (1961) and Srinivasachar (1962) gave details of cranial structure. Regal (1966) described the pattern of dentition and tooth replacement. Eaton (1933) described the jaw suspension as streptostylic but de Villiers (1938) regarded it as monimostylic. Czopek (1962) studied structure and vascularization of the lung, mouth and skin. Chromosomes and chromosome number ( $n=13$ ) were described by Humphrey (1959). See Valentine and Dennis (1964) for details of larval characters.

• **ILLUSTRATIONS.** Stebbins and Lowe (1951) and Stebbins (1951, 1966) illustrated the species in color. Bishop (1943)

presented a photograph of dorsal and ventral aspects of an adult, and Stebbins (1954) and Gaige (1917), drawings of adults. The square vent lobes of males were illustrated by Bishop (1943) and Stebbins (1951, 1954). Stebbins (1951) illustrated ventral pigmentation of adults of both subspecies. Gaige (1917), Stebbins (1951), and Regal (1966) illustrated tooth arrangement and Regal (1966) diagrammed tooth replacement. Drawings of the tooth, premaxilla, prevomer, and parasphenoid were provided by Tihen (1958); the skull, limb girdles, foot, hand, vertebra, rib, hyobranchial apparatus of larva and adult by Hilton (1946); thigh musculature by Noble (1931); inner ear by Hilton (1948c); ear ossicles and associated musculature by Monath (1965); and the hyobranchial apparatus, otic region and forepart of the skull by Dunn (1920). De Villiers (1938), Cloete (1961) and Srinivasachar (1962) provided transverse sections and graphic reconstructions of the skull and Cloete (1961) presented a reconstruction of the cranial nerves. Hilton (1952) illustrated the trachea and larynx of adults and larvae, and Czopek (1962) provided photomicrographs of the capillary beds of lungs, skin and palate.

Eggs were illustrated by Noble and Richards (1932), Stebbins (1951, 1966), and Salthe (1963); larvae by Stebbins (1951, 1954), and Valentine and Dennis (1964), who gave drawings of the gills, gular fold and caudal region. Stebbins (1951) provided a photograph of the habitat.

• **DISTRIBUTION.** *Rhyacotriton olympicus* ranges from the Olympic Peninsula of northwestern Washington southward to Mendocino County, California, in humid coastal forests. The



MAP. The solid symbols mark type-localities; open circles indicate other localities; area of intergradation indicated by overlap of shading patterns.

entire range is west of the crest of the Cascade Mountains. *Rhyacotriton* typically occurs in cold, well-shaded permanent streams. The microhabitat preferred by adults and larvae is moss-covered rock rubble with water trickling through the rocks.

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** The habitats of adults and larvae were briefly discussed by Fitch (1936), Bishop (1943) and Stebbins (1951). Stebbins and Lowe (1951) described the habitat and microenvironment in detail and gave field temperatures. Brattstrom (1963) studied the critical thermal maximum. Ray (1958) discussed tolerance to desiccation and rate of water loss. Whitford and Hutchison (1966) studied pulmonary and cutaneous gas exchange.

Stebbins and Lowe (1951) discussed geographic variation, and von Wahlert (1954) remarked on ventral pigmentation as a subspecific character. Stebbins and Lowe (1951) summarized locality records, and Stebbins (1953) extended the range.

• **ETYMOLOGY.** The specific name refers to the Olympic Mountains of Washington; *variegatus* is Latin for variegated.

# 1. *Rhyacotriton olympicus olympicus* (Gaige) Northern Olympic salamander

*Ranodon olympicus* Gaige, 1917:2.

*Rhyacotriton olympicus*: Dunn, 1920:56. See species synonymy.  
*Rhyacotriton olympicus olympicus*: Stebbins and Lowe, 1951: 465. Recognition of subspecies.

• **DEFINITION.** The dorsal ground color is dark chocolate brown, with numerous small, whitish flecks or dots concentrated laterally in a diffuse band. The dark dorsal coloration ends abruptly along the sides and contrasts with the orange yellow venter. Few or no dark spots occur on the venter but the gular region is often marked with brownish blotches or mottling. Vomerine teeth average 19 (range 12–23).

# 2. *Rhyacotriton olympicus variegatus* Stebbins and Lowe Southern Olympic salamander

*Rhyacotriton olympicus variegatus* Stebbins and Lowe, 1951: 471. Type locality "1.3 miles west of Burnt Ranch Post Office, Trinity County, California." Holotype, Museum of Vertebrate Zoology (University of California) 45868, adult female collected by R. C. Stebbins, 16 November 1947 (not seen by author).

• **DEFINITION.** The dorsal ground color is pale olive or olive and is obscured by numerous, irregular blotches or reticulations of black to blackish-brown. White flecks are present but inconspicuous against ground color. The light markings are obscured laterally and the dorsal coloration grades into the ventral ground color. The venter and gular region are greenish yellow and heavily flecked or spotted with melanic pigment. Vomerine teeth average 25 (range 20–31).

• **REMARKS.** Stebbins and Lowe (1951) gave a detailed description of intergrades and listed localities where they were collected.

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